

Amendments to the Drawings:

The attached replacement sheet of drawings include changes to Fig. 4. The sheet replaces the original sheet 3/4.

Explanation of Changes:

In FIG. 4, the lead line from reference number 406 is changed to more closely point to the via 406.

Attachments: Replacement Sheet 3.

Annotated Marked-up Drawings sheet 3 showing changes.

REMARKS/ARGUMENTS

In an Office Action mailed January 27, 2004, the Examiner rejected claims 1-20. The Examiner also disapproved proposed drawing corrections and/or proposed added sheet of drawings filed on April 21, 2003, on the ground that the new drawings allegedly introduced new matter into the disclosure of the application. The Examiner also objected to amendments to the Specification filed April 21, 2003 and October 10, 2003 on the ground that they allegedly introduced new matter into the disclosure of the invention.

Amendments to the Drawings:

Applicants respectfully request that the Examiner enter the attached amendments to the Drawings without prejudice and without waiving any subject matter. With respect to changes that might cancel certain subject matter which the Examiner alleges was added as new matter previously, Applicants do not admit or deny that any such subject matter was new matter. Applicants merely cancel those changes because those previously proposed changes are not believed necessary to fully support the claims.

Applicants respectfully request that the Examiner cancel previously submitted new sheets 1/5 through 5/5. Applicants request that the Examiner enter or re-enter original sheets 1/4, 2/4 and 4/4 as originally filed and enter replacement sheet 3/4 showing changes to FIG. 4.

The change to FIG. 4 is fully described in the Amendments to the Drawings section above and on the attached Marked Up Annotated Copies of the new drawing sheets. As noted, the changes are fully supported in the Specification as originally filed.

Amendments to the Specification:

Applicants respectfully request that the Examiner enter the attached amendments to the Specification without prejudice and without waiving any subject matter. With respect to the removal of language added by previous amendment which the Examiner alleges is new matter, Applicants do not admit or deny that those changes include new matter. Applicants merely cancel those changes because those previously proposed changes are not believed necessary to fully support the claims.

The amendments to the Specification include:

1. Amending the Brief Description to the Drawings to remove reference to cancelled FIG. 4B and to rename FIG. 4A to FIG. 4, consistent with the attached replacement sheet.

2. Amending certain paragraphs so that they are similar to the paragraphs as originally filed.

3. Amending the Specification to state what is shown in FIG. 4, namely that, "[p]ortions of the metal 407 in the predefined vias 406 form the separation barrier 408 between conductive portions of a thin film resistor 112 and an associated power bus 128." This change is fully supported in the Specification as filed. The first partial paragraph at the top of page 8 (lines 2-6) recites that the, "second metal layer 404 is conformed with plural vias 406 (FIG. 4 illustrates one via and one resistor for illustrative purposes only) and includes a top conductive metal 400 and metal 407, which at one portion is the resistor 112 and at another portion is a separation barrier 408." The third paragraph on page 8 (lines 12-14 - as originally filed), recite that the, "predefined vias 406 form the separation barrier 408 between conductive portions of a thin film resistor 112 and an associated power bus 128." FIG. 4 shows a via 406 with a separation barrier 408, which is a portion of metal 407, between the conductive portions of the thin film resistor 112 and the metal layer 408. The specification also recites that, "[r]eferring to FIG. 1 along with FIGS. 4-5, power is sent from the power bus 128

[(the specification as filed included a typo referring to the power bus with reference number 108 - this error has been corrected by amendment)] to the resistors 1-n 112, 114, 116 through the power vias 140, 142.”

4. Amending the Specification to consistently refer to the term “power bus” with reference number 128.

Objections to the Claims:

“The Power Bus”

The Examiner objected to claims 7, 9, 11, 12 and 15 on the grounds that “the power bus” allegedly lacks proper antecedent basis. Applicants respectfully request that the Examiner withdraw the objection, in light of the amendments to Claim 1.

“The Controller Vias”

The Examiner objected to claim 13 on the grounds that “the controller vias” allegedly lacks antecedent basis. Applicants respectfully request that the Examiner withdraw the objection because amended claim 13 does not recite “controller vias.”

“The Power Via”

The Examiner objected to claim 17 on the grounds that “the power via” allegedly lacks proper antecedent basis. Applicants respectfully request that the Examiner withdraw the objection because amended claim 17 does not recite “the power via.”

Rejections - 35 USC § 112:

Claims 11, 12, 15, 18:

The Examiner rejected claims 11, 12, 15 and 18 under 35 USC § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards the invention.

Applicants respectfully submits that the rejections of Claims 11, 12 and 18 are moot in light of the cancellation of claims 11 and 12.

Applicants respectfully request that the Examiner withdraw the § 112 rejections of claims 15 and 18 in light of the amendments to Claims 15 and 18. Applicants respectfully believe that amended claims 15 and 18 are definite.

Rejections - 35 USC § 102:

The Examiner rejected claims 1, 3, 6, 7, 9, 10, 11, 12, 14, 15 and 16 as allegedly invalid as anticipated by US 6,056,391 (Kasamoto). Applicants respectfully submit that the Examiner has failed to establish a prima facie case of anticipation because Kasamoto does not disclose each and every limitation of the rejected claims.

Claims 1, 3, 6, 7 and 9:

Kasamoto does not disclose at least the following limitations of amended independent claim 1 and dependent claims 3, 6, 7 and 9:

“ . . . wherein the bottom corrosion-resistant layer portion comprises a corrosion separation barrier between the resistors and the power bus at the least one via.”
Kasamoto does not disclose, “At least one power via [1105] including a separation barrier [the portion that filled the power via 1105] located adjacent the first metal layer and between the resistor and the power source/bus [the power source/bus is inherent because it is necessary for heating the resistors].”

In Kasamoto, the “connection electrode layer 1110d is connected to the common lead electrode layer [1110c and 1110b] by way of the resistor layer 1103 at the through-hole 1105.” 6:24-26. The “common lead electrode” is a “return portion” of the electrodes for the heat generating portion 1102. 1:53-59; 6:62-65. Kasamoto does not disclose that a bottom corrosion-resistant layer portion comprises a corrosion separation barrier between the resistors and the power bus at the at least one via. Dependent claims 3, 6, 7 and 9 are also allowable over Kasamoto, at least because Kasamoto does not disclose each and every limitation of independent claim 1, as discussed above. Dependent claims 3, 6, 7 and 9 are further allowable over Kasamoto because they include additional limitations that serve to further distinguish the claims over Kasamoto.

Claims 10, 11, 12, 14, 15 and 16:

Kasamoto does not disclose at least the following limitations of amended independent claim 10 and dependent claims 12, 14, 15 and 16:

“... connecting a power bus to the at least one thin film resistor with a power via;
and

substantially preventing spreading of the ink corrosion from the thin film resistor to the power bus with a separation barrier portion of the power via.”

As discussed above, with respect to claim 1, the “through-hole 1105” connects the “return portion” to a “common lead electrode.” Kasamoto does not disclose “connecting a power bus to the at least one thin film resistor with a power via” or “substantially preventing spreading of the ink corrosion from the thin film resistor to the power bus with a separation barrier portion of the power via.” Applicants therefore respectfully request that the Examiner withdraw the rejections of independent claim 10 and dependent claims 11, 12, 14 and 15. Claims 11, 12, 14 and 15 are further allowable because they include additional limitations that serve to distinguish the claims further over Kasamoto.

Rejections - 35 USC § 103:

In the Office Action mailed January 27, 2004, the Examiner rejected claims 2, 8, 13, 17, 18, 19 and 20 as allegedly obvious over Kasamoto in view of US 5,187,500 (Bohorquez) and rejected claims 4 and 5 as allegedly obvious over Kasamoto in view of US 5,159,353. Applicants respectfully disagree. Applicants respectfully submit that the Examiner has not established a prima facie case of obviousness, at least because neither Kasamoto nor Bohorquez, alone or in combination, discloses, teaches or suggests each and every limitation of the rejected claims.

Claims 2 and 8:

For reasons similar to those given above, with respect to the alleged anticipation of claim 1, Kasamoto does not disclose, suggest or teach all of the limitations of claim 1, from which claims 2 and 8 depend. For example, Kasamoto does not disclose, teach or suggest at least, “wherein the bottom corrosion-resistant layer portion

comprises a corrosion separation barrier between the resistors and the power bus at the least one via," as recited in amended claim 1.

The Examiner has also failed to establish a prima facie case of obviousness because Bohorquez does not disclose, teach or suggest the following limitations of claims 2 and 8:

"... a controller bus that is connected to the at least one resistor at a controller via."

Amended Claim 2; or

"... power is routed from each resistor of the set of resistors to corresponding controller vias."

Amended Claim 8. Moreover, the portions of Bohorquez cited by the Examiner as showing certain limitations in a previous version of claims 2 and 8 do not disclose, teach or suggest the limitations found by the Examiner. The Examiner stated that Bohorquez discloses, "[a] controller bus [119] that is connected to controller vias [117] that are connected to resistors [111]." In FIG. 1, Bohorquez shows a circuit diagram having, "respective control nodes 115 are connected to respective switching circuitry 117, schematically shown as transistors, which are controlled by a control logic circuit 119." 2:54-58. Bohorquez, however, does not disclose, teach or suggest the limitations set out above and does not disclose, teach or suggest each and every limitation of claims 2 or 8, alone, or in combination with Kasamoto.

Applicants respectfully submit that amended claims 13, 17, 18, 19 and 20 are also allowable over Bohorquez and Kasamoto for similar reasons.

New Claims:

Applicants respectfully request that the Examiner enter new claims 21 through 39 and place all of the new claims 21 through 39 in condition for allowance.

Applicants respectfully submit that none of claims 21 through 39 are anticipated by or obvious in light of any of Kasamoto, Bohorquez or Fasen, alone or in combination.

For example, none of Kasamoto, Bohorquez or Fasen disclose, teach or suggest, alone or in combination, all of the limitations of any of the claims and do not disclose, teach or suggest, alone or in combination, the combinations of limitations as claimed. For example, the cited references do not disclose, teach or suggest at least the following limitations of the new claims:

“ . . . a first metal layer comprising a portion for providing power to a resistor;

a non-metal portion overlying the first metal layer and comprising a via;

a second metal layer overlying the non-metal layer, conformed with the via and comprising a top conductive layer portion over a bottom layer portion, wherein the bottom layer portion comprises a resistor and an electrical connection portion, wherein the first metal layer is electrically connected to the electrical connection portion of the bottom layer portion at the via.”

Claims 21-25;

“ . . . a first metal layer comprising a portion for providing power to at least first and second resistors”

Claims 26-30;

“ . . . a top metal layer comprising a top conductive layer portion over a corrosion-resistive layer portion, wherein the corrosion-resistive layer portion comprises a resistor portion and an electrical connection portion;

a bottom metal layer for connecting a power source to the top metal layer, wherein the bottom metal portion is electrically connected to the top metal layer at the electrical connection portion and the electrical connection portion comprises a corrosion barrier between metal layer and the power conducting portion.”

Claims 31-32;

“ . . . a first conductive metal layer comprising a power supply portion for providing a common supply of electrical power to the plurality of resistors”

Claims 33-35;

“ . . . providing a first metal layer comprising a power bus and a FET bus”


Claims 36-39.

Applicants respectfully submit that the new claims are supported in the Specification as filed. The claims are supported at least at FIGS. 4 and 5 and page 7, line 25 through page 9, line 12.

CONCLUSION

For the foregoing reasons, Applicants respectfully request that the Examiner withdraw the objections and rejections of the pending claims 1-10 and 13-20, enter new claims 21-39 and place all pending and new claims in condition for allowance.

Respectfully submitted,



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ANNOTATED SHEET SHOWING CHANGES

10007153
3/4

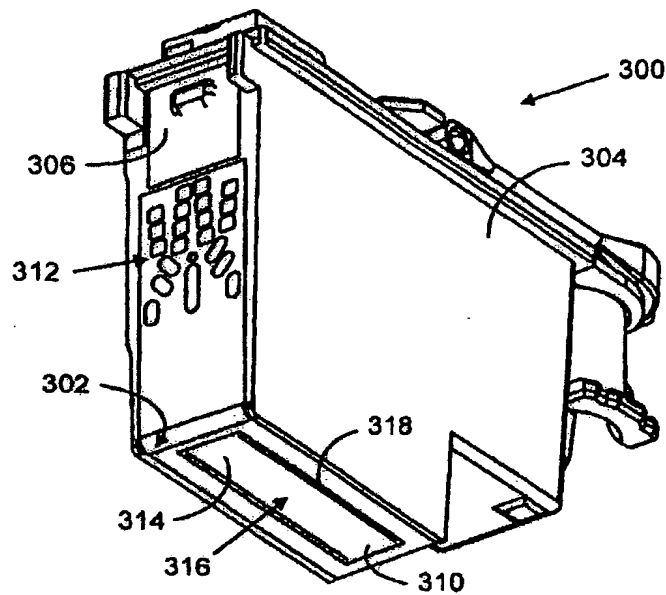


FIG. 3

Arrow for ref. no. 406 lead line extended.

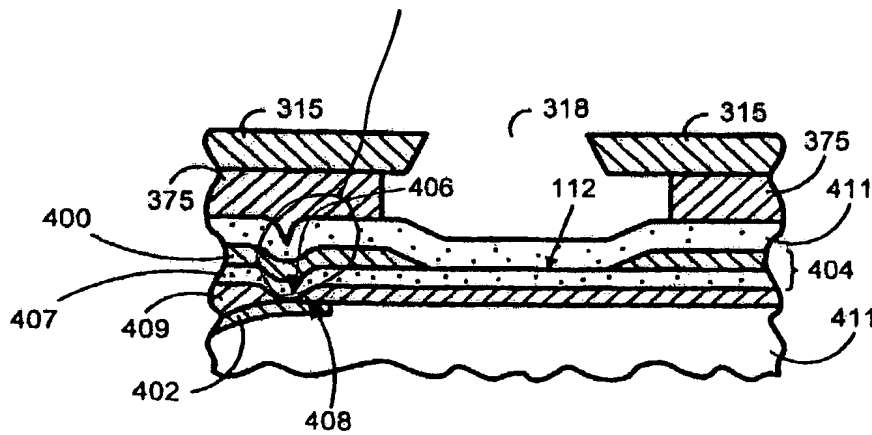


FIG. 4